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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/694,145	10/27/2003	Barbara Horn	200314366-1	3276
22879	7590	02/22/2006	EXAMINER	
HEWLETT PACKARD COMPANY P O BOX 272400, 3404 E. HARMONY ROAD INTELLECTUAL PROPERTY ADMINISTRATION FORT COLLINS, CO 80527-2400			VO, ANH T N	
			ART UNIT	PAPER NUMBER
			2861	

DATE MAILED: 02/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/694,145

Applicant(s)

HORN ET AL.

Examiner

Anh T.N. Vo

Art Unit

2861

PM

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 20 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 6 and 34-38 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 6 and 34-38 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **NON-FINAL REJECTION**

The rejections over Mrvos et al. (US Pat. 6,409,312) and Park et al. (US Pat. 6,757,973) are withdrawn in view of the arguments presented in the amendment.

The rejection of claims 34-38 are rejected under the judicially created doctrine of obviousness-type double patenting over claims 27-29 of Pub No: US 2005/0036004A1 is withdrawn in view of the amendments to claims 27-29.

### ***Claim Rejections***

#### ***Claim Rejections - 35 USC § 112***

Claims 6 and 34-38 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Correction or clarification is required.

In claim 6, it is not understood what the “feature” and “first process” on line 2, “first profile” on line 5, “second profile” on line 6 and “second different process” on line 7 are and how they are read on the preferred embodiment. Insofar as understood, no such processes and profiles are seen on the drawings. Also, it is unclear how the process can remove the material. The same is true for reciting “at least two substrate removal processes” on line 3 of claim 34, “three different removal processes” in claim 35, “process” on line 2 and “processes” on line 3 of claim 36, and “feature” on line 3 and process” on line 4 of claim 38.

In claim 34 it is unclear how the process can “mechanically condition” the surface and how this limitation is read on the preferred embodiment or seen on the drawings.

In claim 38, it is unclear how the process can remove debris and how this limitation is read on the preferred embodiment or seen on the drawings.

Claim 37 is dependent from claim 34 and therefore also considered indefinite.

### ***Claim Rejections***

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim 6 is rejected under 35 USC102 (e) as being anticipated by Boyle et al (Pub No. US 2002/0170891, S/N=10/102,703).

As the best construed, Boyle et al disclose in Figures A-B and 1-2 a device comprising:

- a substrate (Si) having a feature (slot) formed by a first process (first step) that removes substrate material from the substrate, the feature extending into the substrate and within the substrate along an axis, where a cross-section of the feature taken transverse the axis has an upper terminus (top) proximate a first substrate surface, the upper terminus having a first profile; and
- wherein the upper terminus is formed to have a second profile different from the first profile by a second different process (cleaning step) that removes additional substrate material (damage zone and debris in Figure A) from the substrate.

Claim 6 is further rejected under 35 USC 102 (b) as being anticipated by Baughman et al (US 5,608,436).

As the best construed, Baughman et al disclose in Figures 4A\_4D a device comprising:

- a substrate (12) having a feature (18') formed by a first process (4A) that removes substrate material from the substrate, the feature extending into the substrate and within the substrate along an axis, where a cross-section of the feature taken transverse the axis has an upper terminus (top) proximate a first substrate surface (12a), the upper terminus having a first profile; and
- wherein the upper terminus is formed to have a second profile different from the first profile by a second different process (Figure 4C) that removes additional substrate material from the substrate.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

- (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are

such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 34-38 are rejected under 35 USC 103 (a) as being unpatentable over Hall et al (US 6,902,867) in view of Boyle et al (US2002/0170891, S/N=10/102,703).

Hall et al discloses in Figures 2 and 5-27 a printhead comprising:

- a substrate (32, Figure 2) comprising at least a first substrate surface and a second substrate surface;
- a fluid-handling slot (14) formed by at least two substrate removal processes (column 7, lines 50-62) performed on the first substrate surface and the second substrate surface; and
- an orifice layer (36) positioned over the first substrate surface, the orifice layer having multiple firing nozzles (40) formed therein, at least some of the nozzles being in fluid flowing relation with the fluid-handling slot (14 (Figure 2).

However, Hall does not disclose that at least one of the first substrate surface and the second substrate surface being mechanically conditioned by at least one of the removal processes prior to the orifice layer (36) being positioned over the first substrate surface, at least in part, to reduce an incidence of debris occluding ink flow through individual nozzles.

Boyle et al suggests in Figures A-B and 1-2 using a laser (11, 12) to form a slot on a substrate (Si) and clean debris on the surface of the substrate (Figure A) to provide a high quality finish surface, lines 6-18, column 2 of page 1. Employing the laser would reduced equipments required during manufacture, see lines 19-44, column 2 of page 1.

It would have been obvious to a person having skill in the art at the time the invention

was made to use the laser as suggested by Boyle et al in the printhead of Hall et al to form the slot and remove the debris for the purpose of providing a high quality finish surface and reducing equipment during manufacture.

Noted that the slot (14) of Hall et al is formed by using two step processes to remove unused material from the substrate. However, a skilled artisan realizes that the number of removal processes are determined by the thickness and the material of the substrate or the size and shape of the slot so that it can provide a perfect slot. Thus, employing an optimum three different substrate removal processes as claimed is considered to be a matter of a mechanical design expedient for an engineer. Lacking of showing any criticality, one skilled in the art would be motivated to employ the optimum three step processes to form the slot of Hall et al for the purpose of accommodating with thickness and material of a predetermined substrate.

Claims 34-38 are rejected under 35 USC 103(a) as being unpatentable over Baughman et al. (US Pat. 5,608,436) in view of Boyle et al (US2002/0170891, S/N=10/102,703).

Baughman et al. disclose in Figures 4A-6D an ink jet print head comprising:

- a substrate (12) comprising at least a first substrate surface (12a) and a second substrate surface (12b), a fluid-handling slot (18) formed by at least two substrate removal processes and extending through the substrate (12) between the first substrate surface and the second substrate surface;
- an orifice layer (22) positioned over the first substrate surface, the orifice layer having multiple firing nozzles (20) formed therein, at least some of the nozzles being in fluid flowing relation with the fluid-handling slot (18);
- wherein the fluid-handling slot (18) is formed utilizing three different substrate removal processes; and
- wherein the fluid-handling slot (18) is formed utilizing at least one substrate removal process directed at the first substrate surface to remove a first portion (18'). Laser ablation can be used to remove the unwanted material portion (18'), see lines 45-58, column 6. A second substrate

removal process directed at the second substrate surface to remove a second portion (18a); see lines 2-10, column 6.

However, Baughman et al does not disclose that at least one of the first substrate surface and the second substrate surface being mechanically conditioned by at least one of the removal processes prior to the orifice layer (22) being positioned over the first substrate surface, at least in part, to reduce an incidence of debris occluding ink flow through individual nozzles.

Boyle et al suggests in Figures 1-2 using a laser (11, 12) to form a slot on a substrate (Si) and clean debris on a surface of the substrate to provide a high quality finish surface, lines 6-18, column 2 of page 1 and reducing equipment required during manufacture, see lines 19-44, column 2 of page 1 and

It would have been obvious to a person having skill in the art at the time the invention was made to use the laser as suggested by Boyle et al in the printhead of Baughman et al et al to form the slot and remove the debris for the purpose providing a high quality finish surface and reducing equipment during manufacture.

Noted that the slot (18) of Baughman et al is formed by using two step processes to remove unused material from the substrate. However, a skilled artisan realizes that the number of removal processes are determined by the thickness and the material of the substrate or the size and shape of the slot so that it can provide a perfect slot. Thus, employing an optimum three different substrate removal processes as claimed is considered to be a matter of a mechanical design expedient for an engineer. Lacking of showing any criticality, one skilled in the art would be motivated to employ the optimum three step processes to form the slot of Baughman et al for the purpose of accommodating with thickness and material of a predetermined substrate.


***Response to Applicant's Arguments***



The applicant argues that Baughman et al and Park do not mention the step of removing debris, and Mrvos et al. do not disclose two substrate removal processes. The arguments are persuasive. However, using the laser to remove debris is suggested in the Boyle et al reference as stated above.

***CONCLUSION***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Anh Vo whose telephone number is (571) 272-2262. The examiner can normally be reached on Tuesday to Friday from 9:00 A.M.to 7:00 P.M.. The fax number of this Group 2861 is (571) 273-8300.



ANH N. VO  
PRIMARY EXAMINER  
February 17, 2006